

## **REMARKS**

### **1. Summary of Office Action**

In the Office Action mailed September 26, 2007, the Examiner rejected claims 15-17 under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,599,668 (Stimpson). Further, the Examiner rejected claims 15-25 under 35 U.S.C. § 103(a) as being allegedly unpatentable over International Publication No. WO/9735181 (Herron) and Stimpson. Still further, the Examiner provisionally rejected claims 15-25 under 35 U.S.C. § 101 as claiming the same invention as that of claims 51-67 of co-pending Application No. 11/530,110 (U.S. Application Pub. No. 2007/0041624). In addition, the Examiner rejected claims 15-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 51 and 66 of co-pending U.S. Patent Application No. 11/530,138 (U.S. Patent Application Pub. No. 2007/0148665).

Further, the Examiner rejected claims 15-25 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention.

### **2. Status of the Claims**

Applicant's specification explains that "[d]etection of one, some or all of the spots on a substrate is difficult to perform. The surface area of the spots can be a very small portion of the entire image contributing to the difficulty of detecting the spots." See Applicant's specification at page 23, lines 18-20. Applicant's specification continues to explain that "in the context of an image being composed of pixels, the spot may be on the order of 100 pixels or less within an entire pixel area of 1.2 million pixels. In addition, dirt, dust or the like may cause noise in the acquired image. Optionally, an 'optimal' image of at least some (and preferably all) of the

hybridized spots on the substrate is acquired.” *Id.* at page 23, lines 20-25. In this regard, Applicant’s specification explains that the “optimal exposure time . . . may best enable the detection of spots on the substrate.” *Id.* at page 40, lines 27-30.

By this response, Applicant has amended claims 15-25. Support for these amendments can be found under the section titled “Spot Detection” and “Spot Quantification” beginning on page 23 and page 40 of Applicant’s specification. Further, Applicant has added dependent claim 39. Support for this newly added dependent claim can be found on page 25, lines 6-23.

Now pending are claims 15-25 and 39. Of these claims, claim 15 is independent and the remaining claims are dependent. Independent claim 15, as amended, includes a method of “determining an optimal exposure time to assist in the detection of spots; acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time.”

### **3. Response to Examiner’s § 112 Rejections**

As noted above, the Examiner rejected claims 15-25 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention.

By this response, Applicant has amended each of the pending claims. No new matter has been added. Consequently, Applicant respectfully traverses the 35 U.S.C. § 112 rejection.

### **4. Response to Examiner’s § 102 Rejections**

As noted above, the Examiner rejected claims 15-17 under 35 U.S.C. § 102(b) as being allegedly obvious over Stimpson. Application respectfully traverses the rejection because Stimpson does not teach each and every element as required M.P.E.P. § 2131. In particular,

Stimpson does not teach a method that includes “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time.”

At best, Stimpson teaches a method of taking multiple images at different times. *See e.g.*, Stimpson at column 22, lines 44-45. According to Stimpson, taking images at different times allows “kinetic information to be obtained.” *Id.* at column 22, lines 49-50. To illustrate by way of example, Stimpson teaches that “[m]easuring the rate of change of the intensity of scattered light from a given region of the reactive surface versus time provides a reaction rate. By using reaction kinetics, the rate is correlated to a quantitative measure of analyte concentration in the sample solution. Of course, data may be gathered at more than two times; generally the more data points obtained, the more reliable the kinetic or rate information.” *Id.* at column 22, lines 58-63. In this regard, Stimpson is directed to taking images at different times.

Taking images at different times, however, does not amount to acquiring multiple images, the multiple images being taken *at different exposures* by varying at least one parameter that controls a sensor used to detect spots. Nowhere does Stimpson disclose a method that includes “acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots,” as recited in amended claim 15.

In addition, even if one were to assume for the sake of argument that Stimpson teaches a method of acquiring multiple images at different exposures (which Applicant does not concede), Stimpson still fails to teach a method of determining an optimal exposure time and acquiring an

image at that optimal exposure time. As noted above, Stimpson teaches a method of taking images at different times. Applicant finds no teaching of “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time,” as recited in amended claim 15.

For at least these reasons, Applicant submits that Examiner has not established anticipation of Applicant’s independent claim 15 as amended. Thus, Applicant submits that claim 15 is allowable. Accordingly, Applicant submits that claims 16-25 and 39 are allowable for at least the reason that they are dependent on an allowable claim.

#### **5. Response to Examiner’s § 103 Rejections**

As noted above, the Examiner rejected claims 15-25 under 35 U.S.C. § 103 as being allegedly obvious over a combination of Herron and Stimpson. This rejection is clearly erroneous, because there is no teaching or suggestion in Herron and Stimpson, or the combination of Herron and Stimpson, to carry out the steps recited in Applicant’s independent claim 15. At a minimum, the cited art fails to disclose or suggest the method of “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time.”

On page 7 of the Office Action, the Examiner cited to page 22, lines 3-17 and asserted that Herron teaches “determining an optimal exposure.” Applicant, however, has reviewed this

portion and submits that Herron fails to teach a method that includes “determining an optimal exposure time.”

The cited portion in Herron is directed to a method of varying analyte concentration to determine a relationship between the fluorescence intensities and analyte concentration. *See* Herron at page 22, lines 3-17. In particular, Herron teaches that “[a] solution with a known minimum analyte concentration is passed through well 150 and a solution with a known maximum analyte concentration is passed through well 150. The process is repeated with progressively larger known analyte concentrations  $[A]_1, [A]_2, \dots, [A]_N$  passed through antibody well 152 of a tray 130-2, the photodetection means determines corresponding fluorescence intensities.” *See* Herron at page 21, line 32 to page 22, line 6. (Emphasis added.) By varying analyte concentration, Herron is able to determine corresponding intensities and thereby determine a relationship between analyte concentration and fluorescence intensities.

Varying analyte concentration, however, does not amount to a method of “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time.” Applicant finds no discussion of “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying parameters that control a sensor used to acquire the multiple images, and at least one of the multiple images being taken at the optimal exposure time.”

For at least these reasons, Herron fails to teach the combination of elements recited in claim 15. Thus, the issue that remains now is whether Stimpson makes up for these deficiencies

in Herron. In fact, as noted above, Stimpson suffers from same deficiencies as Herron. In particular, as noted above, nowhere does Stimpson disclose a method of “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time.”

Thus, the combination of Herron and Stimpson fails to teach a method “determining an optimal exposure time to assist in the detection of spots; and acquiring multiple images of the test spot and the control spot, the multiple images being taken at different exposures by varying at least one parameter that controls a sensor used to detect spots, and at least one of the multiple images being taken at the optimal exposure time”; as recited in amended claim 15. Because the combination of Herron and Stimpson fails to disclose or suggest all of the elements of each of independent claim 15 and because the invention of claim 15 does not reasonably follow from the teachings of Herron and Stimpson, the Examiner has not established a *prima facie* case of obviousness of independent claim 15. Consequently, Applicant submits that independent claim 15 is allowable. Each of dependent claims 16-25 and 39 depends from, and thus incorporates all of the limitations of, an allowable independent claim. Thus, for at least the same reason, these dependent claims are also allowable.

#### **6. Response to Examiner’s Statutory Type Double Patenting Rejection**

As noted above, the Examiner rejected claims 15-25, the Examiner provisionally rejected claims 15-25 under 35 U.S.C. § 101 as claiming the same invention as that of claims 51-67 of co-pending Application No. 11/530,110 (U.S. Application Pub. No. 2007/0041624).

By this response, Applicant has amended independent claim 15. No new matter has been added. Consequently, Applicant respectfully traverses the provisional rejection under 35 U.S.C. § 101 for independent claim 15. Accordingly, Applicant respectfully traverses the provisional rejection under 35 U.S.C. § 101 for claims 16-25 and 39 for at least the reason that they are dependent on independent claim 15.

**7. Response to Examiner's Nonstatutory Obviousness-Type Double Patenting Rejection**

As noted above, the Examiner rejected claims 15-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 51 and 66 of co-pending U.S. Patent Application No. 11/530,138 (U.S. Patent Application Pub. No. 2007/0148665).

Applicant respectfully requests the Examiner to hold the Nonstatutory Obviousness-Type Double Patenting Rejection in abeyance until either the instant application or co-pending application (U.S. Patent Application No. 11/530,138) is allowed.

**8. Conclusion**

In view of the foregoing, Applicants submit that claims 15-25 and 39 are allowable, and thus Applicants respectfully request favorable reconsideration and allowance of these claims. Should the Examiner wish to discuss this case with the undersigned, the Examiner is invited to call the undersigned at (312) 913-3351.

Respectfully submitted,

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